

# **Dashboards and Storytelling with Tableau**

*Finding the Story*

A photograph of a man with short dark hair and a goatee, wearing a white button-down shirt. He is looking towards a computer monitor which is out of focus in the background. The image is part of a slide with a blue background on the right side.

Let Tableau help you  
explore data

Quickly **import**  
and **visualize** data

Sketch story possibilities

## Questions about data:

What **types** of data?

What's data **quality**  
and **completeness**?

What are most **relevant**  
**dimensions** of data?

How **fresh** and frequently  
is data updated?

How will data be **framed**?

What **decisions** might  
your story prompt?

Check expressiveness  
and effectiveness

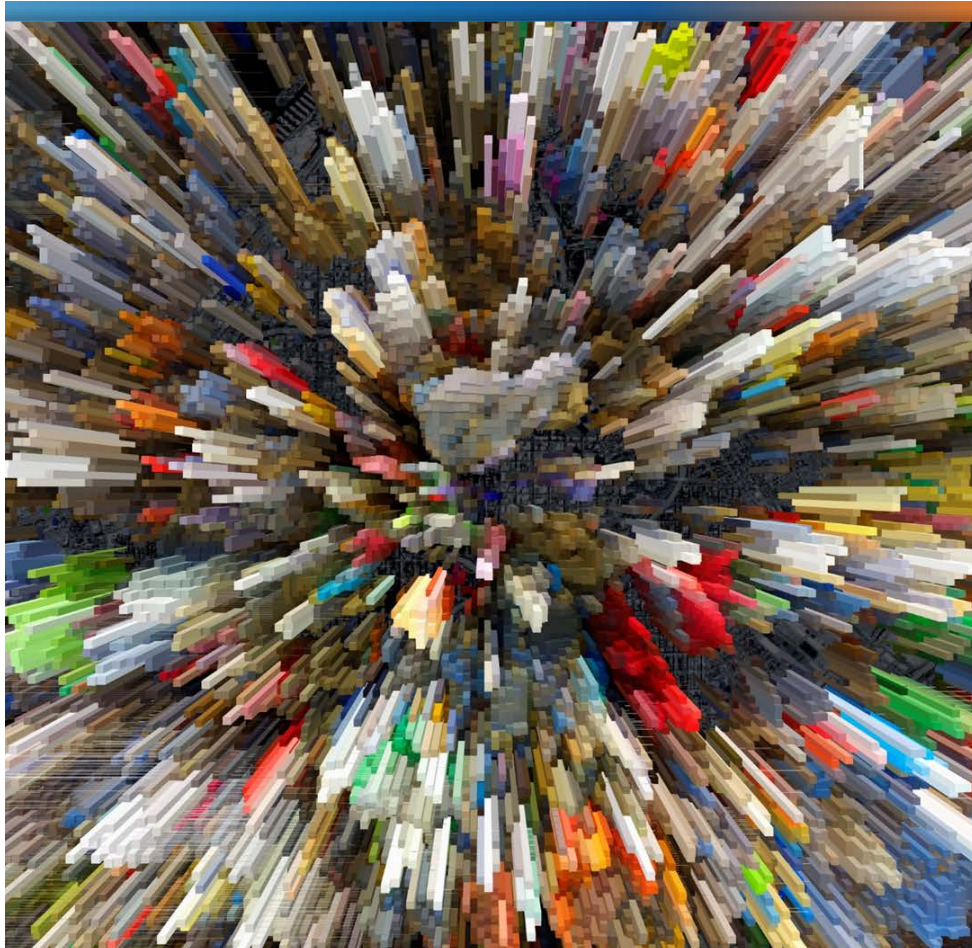
Does data accurately  
**express** the story?

Does presentation  
style **effectively** convey  
meaning of data?

This guides decisions  
to **include** or **exclude**







Ask the right questions  
at the outset

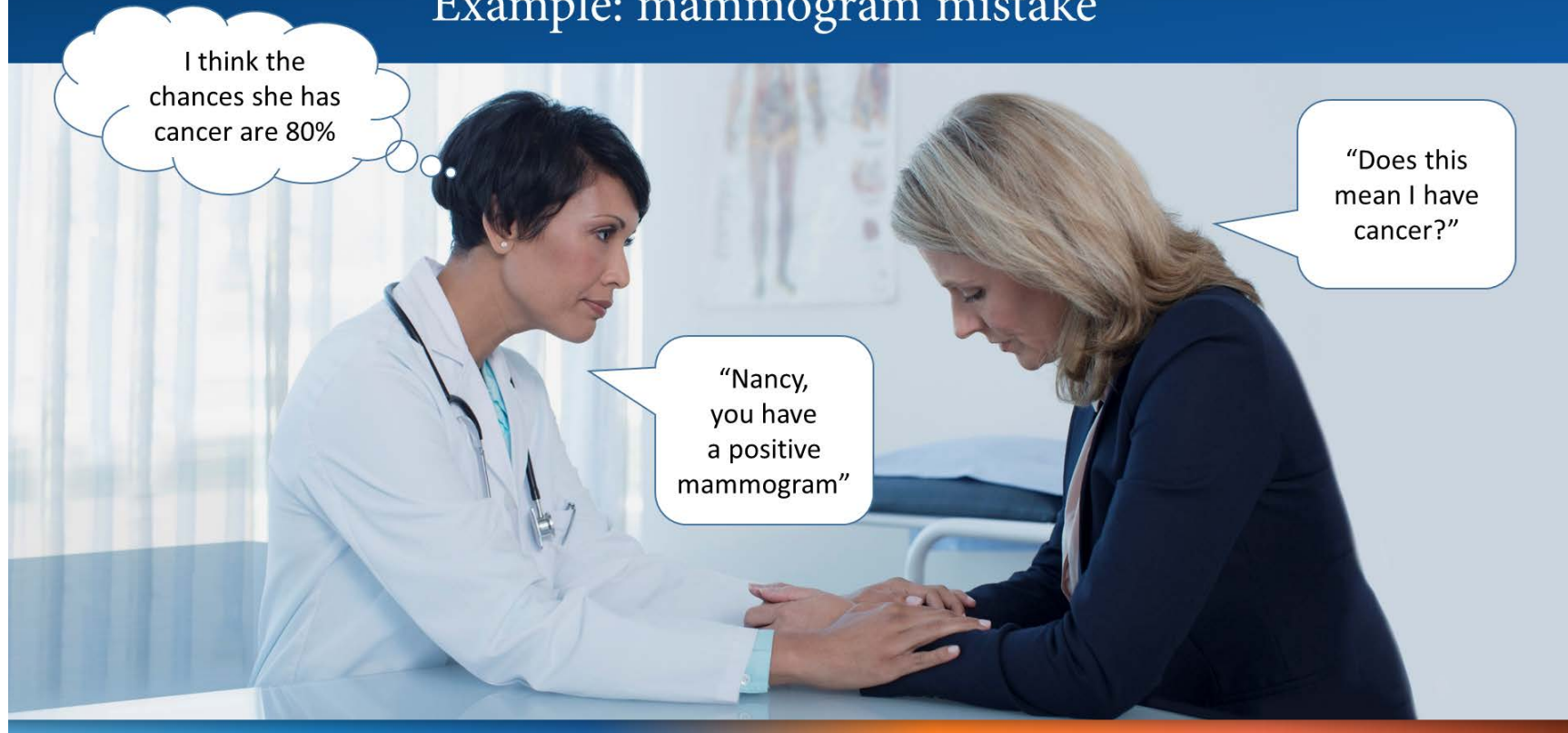
**Not all patterns make  
true stories**

More data, more **risk**  
of false narratives

It's **dangerous** to reason  
from insufficient data

## Insufficient data + bias = distortion

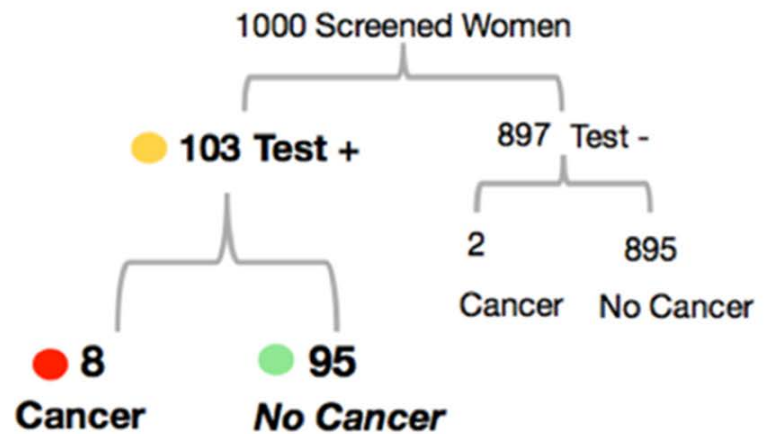
### Example: mammogram mistake



## Charts and numbers can mislead

Incomplete recall = incorrect conclusion

	Has Breast Cancer	Doesn't Have Breast Cancer	Total
Positive Mammogram	(a) 8	(b) 95	103
Negative Mammogram	(c) 2	(d) 895	897
Total	10	990	1000



The actual probability that Nancy has cancer is:

$P = \frac{8}{103}$  or **7.8%**

...that's not trivial, but it's far less than 80% that the physician initially thought.

Diagram reveals true risk level



**Context:** Nancy has a positive mammogram

**Challenge:** Determining what the results mean

**Conclusion:** Chances of cancer 8% not 80%

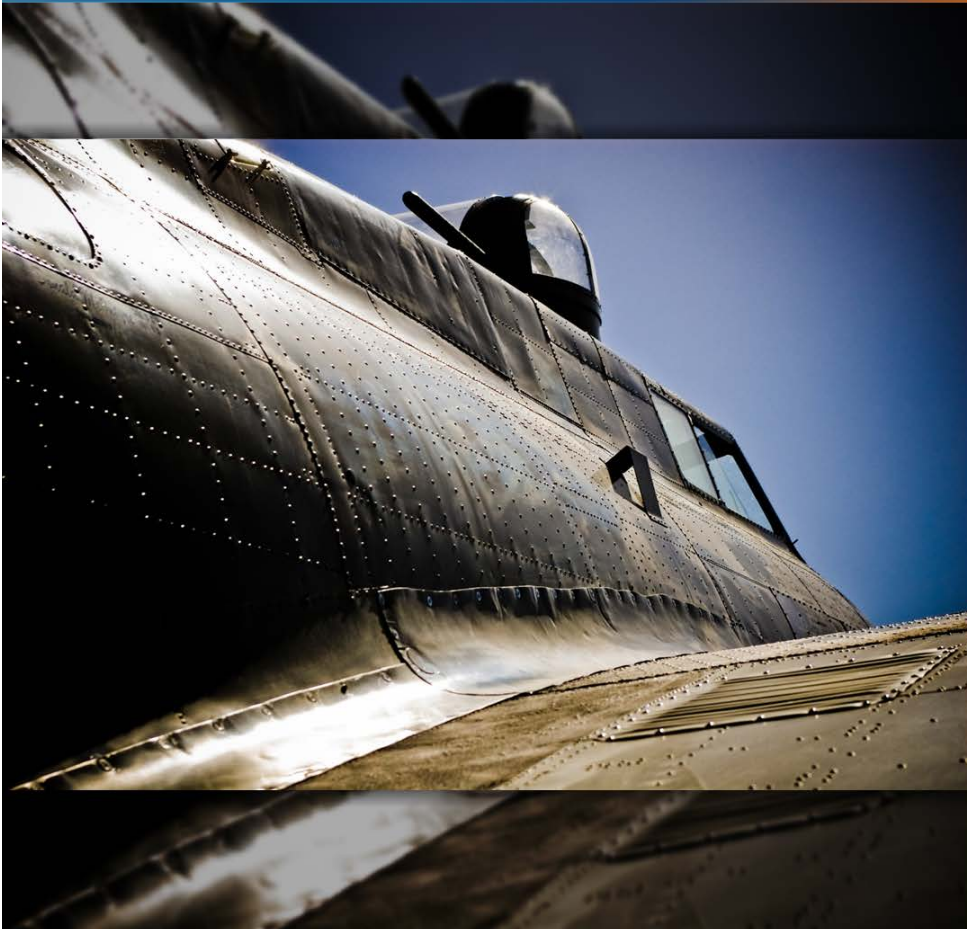
**Moral:** Good story requires bias alert



8%



Revisiting another example: WWII planes



**Context:**

Allied planes shot down  
at alarming rate

**Challenge:** Added  
armor adds weight

**Conclusion:**

Armor added to areas  
that appear to sustain  
the most damage



Where is most useful  
data to be found?

Beware of **Survivor Bias**

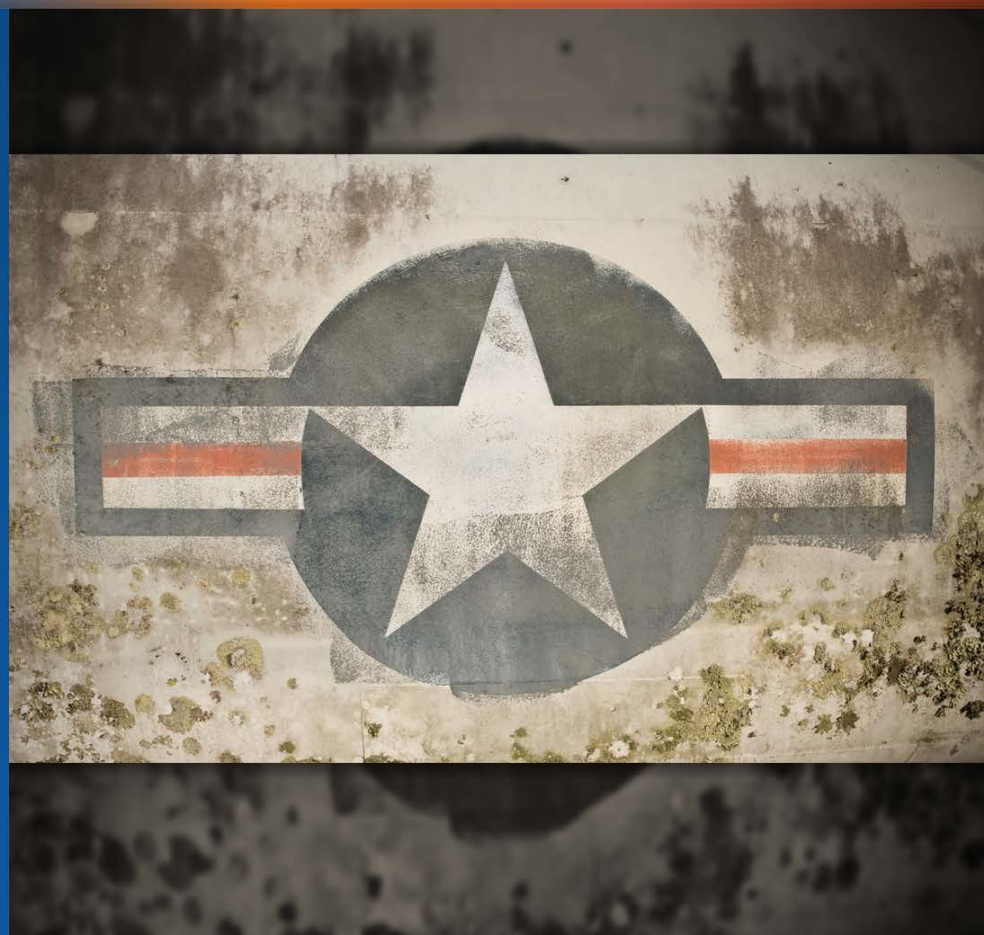
Help audience **recognize**  
and **reframe** full data set



**Context:** Planes shot down at alarming rate.

**Challenge:** Armor adds weight, so be selective about placement. Examine where damage is not survivable.

**Conclusion:** Based on full data set, add armor to most vulnerable areas.





True  
story

Data may be incomplete  
at outset

**To tell a true story:**

Weigh available data

Work to fill gaps

Relevance may shift  
with context

**TABLE 1** Differential diagnosis  
for fever, rash, and arthritis  
in children

### Infectious

#### Viral

Enteroviruses  
Parvovirus B19 polyarthritis syndrome  
Rubella  
Mumps  
HIV

#### Bacterial

Septic arthritis  
Meningococcal meningitis  
(*Neisseria meningitidis*)  
Gonorrhea  
(*Neisseria gonorrhoeae*)  
Rocky Mountain spotted fever  
(*Rickettsia rickettsii*)  
Lyme disease  
(*Borrelia burgdorferi*)  
Secondary syphilis  
(*Treponema pallidum*)  
Leptospirosis  
(*Leptospira interrogans*)  
Rat-bite fever  
(*Streptobacillus moniliformis*, *Spirillum minus*)

### Rheumatologic/immunologic

Juvenile idiopathic arthritis  
Systemic lupus erythematosus  
Juvenile dermatomyositis  
Rheumatic fever  
Henoch-Schönlein purpura  
Postinfectious arthritis  
Kawasaki disease  
Serum sickness  
Acute neutrophilic dermatosis  
(Sweet syndrome)

### Genetic

Familial Mediterranean fever  
Hyperimmunoglobulin-D syndrome  
TNF receptor-1-associated  
periodic syndrome (TRAPS)

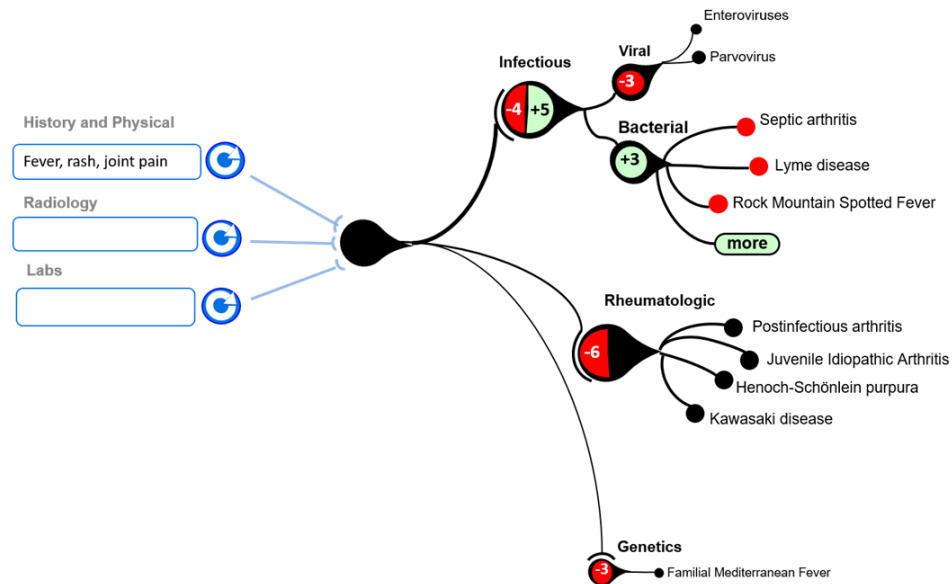
Abbreviations: TNF, tumor necrosis factor.

Consider this case

Hear the case  
and presenting details  
There is **plenty** of data  
But, what is **relevant**?



### Differential Diagnosis (Alternate layout 1)



Hunter Whitney and Veena R Kumar, Pediatric Emergency physician

The difference a diagram can make

**Context:**

Boy has fever and rash;  
unknown cause

**Challenge:**

Finding right diagnosis

**Conclusion:**

Pet rat bit him  
and transmitted  
the infection





All needed data may not  
be available at start

**Irrelevant** data could turn  
out to be **essential**

Data that **may seem true**  
could be **false**

**Test data** against various  
factors and other data

Seeing **different possibilities**  
can **clarify** thinking

